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Continuing Development of the Generalized Tokamak Simulator G.M. FURNISH, Lawrence Livermore Nat'l Lab, W.D. NYSTROM, Los Alamos Nat'l Lab, M.J. LEBRUN, DejaNews, Inc. — The Generalized Tokamak Simulator (GTS) is a global, toroidal, gyrokinetic particle-in-cell code for the simulation of tokamak turbulence and transport in realistic geometry. GTS employs object oriented design expressed in C++ to support a variety of physics models in a unified framework. Particle dynamics, system geometry, grid shape and field solution technique, as well as a host of parameters relating to the computational configuration, can all be set at run time, or even interactively through an advanced graphical user interface for result visualization and post analysis. GTS is designed for execution on high performance parallel computers, and demonstrates scalable performance on machines like the T3D. Results from continuing experience with GTS in both the areas of code design and simulation studies will be presented. GTS is currently being outfitted with advanced template specialization support, and work is beginning to include δf and self consistent magnetic fields. Simulation studies will focus on simulation convergence characteristics for ρ_i scaling runs, with respect to the computational grid, the number of particles, and the toroidal mode spectrum.

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